

National Estimates of Risks/Behaviors: Behavioral Risk Factor Surveillance System and the National Health Interview Survey

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The National Health Interview Survey (NHIS) has been the pre-eminent survey for obtaining national health data on the U.S. population since the 1950s. Data collection is performed by the U.S. Census Bureau and is centralized. In-person interviews within households are conducted using a nationally representative sample of respondents. Data are collected from adults and children, and both self-reports and proxy reports are included. In contrast, the Behavioral Risk Factor Surveillance System (BRFSS) began in the early 1980s and expanded to all states in the early 1990s. The BRFSS was designed to collect state-level risk factor data on adults 18 years of age or older. Data collection is decentralized, with each state collecting data through a contractor or through the state health department. Data are obtained through telephone surveys of representative samples within each state. Only self-reported data are obtained from respondents.

The two surveys use similar questions for several measures. Because the BRFSS is now nationwide, it is potentially a source for national estimates, but the comparability of the NHIS and national estimates from the BRFSS is unclear. This presentation examines the comparability of BRFSS national estimates with NHIS estimates for health care coverage, current smoking status, body mass index, hypertension, diabetes, influenza vaccination and pneumonia vaccination among several populations. The 1997 data files were used since this was the most recent year available for the NHIS at the time the study was initiated.

Prior research suggests that it is appropriate to combine state data (Iachan, et al, 1999). Our examination of selected sample design issues and quality indicators also lent support to combining state data to produce national estimates. The BRFSS sample size is not proportional to state populations, but range in size from 1,505 to 4,923, with a total of 135,582 respondents in 1997. Each state's data are weighted to the state

population (CDC, 2001). The national estimates for BRFSS were based on summing sample records for all states using the final post-stratified weight.

Results: The differences between the NHIS and BRFSS overall national estimates were generally small (< 3 percentage points) for the total population, with no consistent pattern in direction of difference (Table 1). Among all persons combined, estimates between the surveys were very similar for health care coverage, hypertension and diabetes. Among white Non-Hispanics, differences in the estimates ranged from 2.4 percentage points for body mass index to 0.1 for hypertension (see Table 2). The differences in estimates were larger for black non-Hispanics, ranging from 7.5 percentage points for receipt of pneumococcal immunization to 0.6 for health care coverage (see Table 3). Differences in estimates between the two surveys were largest for the Hispanic population (see Table 4). The largest differences between the surveys for the Hispanic population were observed for influenza and pneumococcal immunization among older adults.

Conclusions: BRFSS state data can be combined to produce national estimates for some measures, but these estimates may differ somewhat from the NHIS, especially for certain populations. The differences in the estimates, however, are reasonable given the different methods, design, and mode of collection in the two surveys. In view of the timeliness of data release for the BRFSS, it may be a valuable source of current national data for selected behaviors and risks.

References:

Iachan R, Schulman J, Black R, Collins S, Ellis B. *Evaluation of the Behavioral Risk Factor Surveillance System as a source for national estimates of selected health risk behaviors, final report.* Baltimore, md: Battelle, Inc. 1999.

Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System technical documents and survey data. Available at: www.cdc.gov/nccdphp/brfss/ti-docs.htm. Accessed May 22, 2001.

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Table 1. Comparison of 1997 of NHIS and BRFSS Design-Specific National Estimates: Total Population

Key Health Risk Factors	Estimate		Difference In Estimate
	NHIS	BRFSS	
Health Care Coverage, 18-64	82.6%	83.0 %	-0.4
Current Smoker	24.7%	23.1%	1.6
Body Mass Index	27.3	25.9	1.4
Ever told Blood Pressure High	22.9%	23.3%	-0.4
Ever told had Diabetes	6.5%	6.0%	-0.5
Flu Shot in Past year, 65+	63.2%	65.5%	-2.3
Pneumonia vaccination, 65+	42.4%	45.4%	-3.0

Table 2. Comparison of 1997 of NHIS and BRFSS Design-Specific National Estimates White Non-Hispanic Population

Key Health Risk Factors	Estimate		Difference In Estimate
	NHIS	BRFSS	
Health Care Coverage, 18-64	86.2%	86.6%	-0.4
Current Smoker	25.3%	23.7%	1.6
Body Mass Index	28.1	25.7	2.4
Ever told Blood Pressure High	23.3%	23.4%	-0.1
Ever told had Diabetes	6.1%	5.4%	0.7
Flu Shot in Past year, 65+	65.8%	67.2%	-1.4
Pneumonia vaccination, 65+	45.7%	47.3%	-1.6

Table 3. Comparison of 1997 of NHIS and BRFSS Design-Specific National Estimates Black Non-Hispanic Population

Key Health Risk Factors	Estimate		Difference In Estimate
	NHIS	BRFSS	
Health Care Coverage, 18-64	79.2%	79.8%	-0.6
Current Smoker	26.8%	22.7%	4.1
Body Mass Index	30.0	27.4	2.6
Ever told Blood Pressure High	29.8%	30.8%	-1.0
Ever told had Diabetes	9.5%	8.7%	-0.8
Flu Shot in Past year, 65+	44.8%	50.2%	-5.4

Table 4. Comparison of 1997 of NHIS and BRFSS Design-Specific National Estimates: Hispanic Population

Key Health Risk Factors	Estimate		Difference In Estimate
	NHIS	BRFSS	
Health Care Coverage, 18-64	62.4%	64.2 %	-1.8
Current Smoker	20.4%	20.2%	0.2
Body Mass Index	29.0%	26.6%	2.4
Ever told Blood Pressure High	15.2%	16.8%	-1.6
Ever told had Diabetes	6.9%	8.1%	-1.2
Flu Shot in Past year, 65+	52.7%	57.9%	-5.2
Pneumonia vaccination, 65+	23.5%	34.1%	-10.6